

- B²
- d) K397Q;
 - e) D425A;
 - f) D425N;
 - g) D425E;
 - h) D425K;
 - i) F427A;
 - j) K397D + D425K double mutation;
 - k) K395D + K397D + D425K + D426K quadruple mutation;
 - l) K397D + D425K + F427A triple mutation;
 - m) F427A + ΔD2L2 double mutation;
 - n) K397D + F427A + ΔD2L2 triple mutation;
 - o) K397D + D425K + F427A + ΔD2L2 quadruple mutation;
 - p) F427D;
 - q) F427K; and
 - (r) ΔD2L2.
-

Sub C1
B³

12. (Amended) A mutant B moiety of a pore-forming binary A-B toxin, wherein said mutant B moiety comprises a mutation that inhibits its pore-forming ability, and wherein said mutant B moiety inhibits the pore-forming ability of a naturally-occurring B moiety of said toxin, wherein said mutation is not the deletion of amino acids 302-325 of anthrax protective antigen (SEQ ID NO. 12).

Sub C1
P⁴

19. (Amended) The mutant B moiety of claim 12, having an amino acid sequence that is at least 80% identical to SEQ ID No.: 21 and that has an alteration selected from the group consisting of:

- a) K397D + D425K double mutation;
- b) K395D + K397D + D425K + D426K quadruple mutation;
- c) D425K;
- d) F427A;

- e) K397D + D425K + F427A triple mutation;
- f) F427A + Δ D2L2 double mutation;
- g) K397D + F427A + Δ D2L2 triple mutation;
- h) K397D + D425K + F427A + Δ D2L2 quadruple mutation;
- i) F427D; and
- j) F427K.

Add the following new claims 28-38.

CFR 1.126
29/28. (New) The B moiety of claim 2, having an amino acid sequence that is at least 80% identical to SEQ ID No.: 21.

B5
30/29. (New) The mutant B moiety of claim 19, comprising a deletion of amino acids 302-325 of the D2L2 loop.

31/30. (New) The mutant B moiety of claim 1, wherein said mutation is in the PA63 domain of said B moiety if said B moiety is anthrax protective antigen.

Sub C4
32/31. (New) The mutant B moiety of Claim 11, wherein said mutation is in the PA63 domain of said B moiety if said B moiety is anthrax protective antigen.

33/32. (New) A vaccine composition comprising a mutant B moiety of a pore-forming binary A-B toxin or a fragment thereof in a pharmaceutically acceptable carrier, wherein said mutant B moiety comprises a mutation that inhibits its pore-forming ability, and wherein said mutant B moiety inhibits the pore-forming ability of a naturally-occurring B moiety of said toxin.

34/33. (New) The vaccine of claim 6, wherein said mutation is in the PA63 domain of said B moiety if said B moiety is anthrax protective antigen.